

54

PCT09

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/763,331

DATE: 07/11/2001  
TIME: 11:25:16

Input Set : A:\PTO.txt  
Output Set: N:\CRF3\07112001\I763331.raw

ENTERED

4 <110> APPLICANT: Martin, Charles E.  
5 Mitchell, Andrew  
8 <120> TITLE OF INVENTION: Synthetic Fatty Acid Desaturase Gene for  
9 Expression in Plants  
12 <130> FILE REFERENCE: 97-0081 PCT  
C--> 14 <140> CURRENT APPLICATION NUMBER: US/09/763,331  
C--> 14 <141> CURRENT FILING DATE: 1999-08-24  
14 <150> PRIOR APPLICATION NUMBER: US 60/097,586  
15 <151> PRIOR FILING DATE: 1998-08-24  
17 <160> NUMBER OF SEQ ID NOS: 8  
19 <170> SOFTWARE: FastSEQ for Windows Version 4.0  
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22 <211> LENGTH: 1555  
23 <212> TYPE: DNA  
24 <213> ORGANISM: *Saccharomyces cerevisiae*  
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28 gatatgactct gcccaggatg gatattgtcgaa cgaatgcac ttaacggaa ctaatatttt 120  
29 ggctactgggt ttgaataaga aagcaccaag aattgtcaac gttttgggtt cttaatggg 180  
30 ctccaaaggaa atggttccg tggaaattcgaa caagaaggaa aacgaaaaga agtccaattt 240  
31 gatatgtctg ctatggaaagg acaaccaaga aaaagaagaa gctaaaacta aaattcacat 300  
32 ctccgaacaa ccatggactt tgaataactg gcaccaacat ttgaacttgt tgaacatgg 360  
33 tcttgggtgt ggtatgccaa tgattgggtt gtacttcgct ctctctggta aagtaccttt 420  
34 gcatttaaac gttttccctt tctccgtttt ctactacgct gtcgggtgtt tttcttattac 480  
35 tgccgggttac catagattat ggtctcacag atcttactcc gtcactggc cattgagatt 540  
36 attctacgct atcttcgggtt gtgttccgt tgaagggtcc gctaaatggt gggggccactc 600  
37 tcacagaatt caccatcggtt acactgatac ttgagagat cttatgacg ctcgttagagg 660  
38 tctatggtagt tcccacatgg gatggatgt tttgaagcca aatccaaaat acaaggctag 720  
39 agctgatatt accgatatacgtt ctgatgattt gaccattttaga ttccaaacaca gacactacat 780  
40 cttgtttagt ttatccatcc ctttcgtcat tccaaactttt atctgtgggtt acttttca 840  
41 cgactatatg ggtgggttga tctatgcccgg ttttattcgt gtctttgtca ttcaacaacg 900  
42 tacctttgc attaactcca tggctcatta catcggtacc caaccattcg atgacagaag 960  
43 aaccctcgat gacaactgga ttactgcccattt gtttactttt ggtgaagggtt accataactt 1020  
44 ccaccacgaa ttcccaactg attacagaaa cgctattaaag tggtagccaaat acgaccacac 1080  
45 taagggttac atctatttgc cttctttatgt tggcttagca tacgacttga agaaattctc 1140  
46 tcaaaaatgtt attgaagaag ctttgattca acaagaacaa aagaagatca ataaaaagaa 1200  
47 ggctaaaggatt aactgggttc cagtttgcac tgatttgcac atgtgggaca aacaaacccctt 1260  
48 cttggctaaatg tctaaggaaa acaagggtttt ggttattcatt tctgggtattt ttcacgacgt 1320  
49 atctggttat atctctgaac atccaggtgg tggaaacttta attaaaactg cattaggtaa 1380  
50 ggacgctacc aaggcttca gtgggtgtt ctaccgtcac tcaaattccg ctcaaatgt 1440  
51 cttggctgat atgagagtttgc ctgttatcaa ggaaagtaag aactctgcttta tttagatggc 1500  
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54 <210> SEQ ID NO: 2  
55 <211> LENGTH: 510  
56 <212> TYPE: PRT  
57 <213> ORGANISM: *Saccharomyces cerevisiae*  
59 <400> SEQUENCE: 2

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60 Met Pro Thr Ser Gly Thr Thr Ile Glu Leu Ile Asp Asp Gln Phe Pro  
61 1 5 10 15  
62 Lys Asp Asp Ser Ala Ser Ser Gly Ile Val Asp Glu Val Asp Leu Thr  
63 20 25 30  
64 Glu Ala Asn Ile Leu Ala Thr Gly Leu Asn Lys Lys Ala Pro Arg Ile  
65 35 40 45  
66 Val Asn Gly Phe Gly Ser Leu Met Gly Ser Lys Glu Met Val Ser Val  
67 50 55 60  
68 Glu Phe Asp Lys Lys Gly Asn Glu Lys Lys Ser Asn Leu Asp Arg Leu  
69 65 70 75 80  
70 Leu Glu Lys Asp Asn Gln Glu Lys Glu Ala Lys Thr Lys Ile His  
71 85 90 95  
72 Ile Ser Glu Gln Pro Trp Thr Leu Asn Asn Trp His Gln His Leu Asn  
73 100 105 110  
74 Trp Leu Asn Met Val Leu Val Cys Gly Met Pro Met Ile Gly Trp Tyr  
75 115 120 125  
76 Phe Ala Leu Ser Gly Lys Val Pro Leu His Leu Asn Val Phe Leu Phe  
77 130 135 140  
78 Ser Val Phe Tyr Tyr Ala Val Gly Gly Val Ser Ile Thr Ala Gly Tyr  
79 145 150 155 160  
80 His Arg Leu Trp Ser His Arg Ser Tyr Ser Ala His Trp Pro Leu Arg  
81 165 170 175  
82 Leu Phe Tyr Ala Ile Phe Gly Cys Ala Ser Val Glu Gly Ser Ala Lys  
83 180 185 190  
84 Trp Trp Gly His Ser His Arg Ile His His Arg Tyr Thr Asp Thr Leu  
85 195 200 205  
86 Arg Asp Pro Tyr Asp Ala Arg Arg Gly Leu Trp Tyr Ser His Met Gly  
87 210 215 220  
88 Trp Met Leu Leu Lys Pro Asn Pro Lys Tyr Lys Ala Arg Ala Asp Ile  
89 225 230 235 240  
90 Thr Asp Met Thr Asp Asp Trp Thr Ile Arg Phe Gln His Arg His Tyr  
91 245 250 255  
92 Ile Leu Leu Met Leu Leu Thr Ala Phe Val Ile Pro Thr Leu Ile Cys  
93 260 265 270  
94 Gly Tyr Phe Phe Asn Asp Tyr Met Gly Gly Leu Ile Tyr Ala Gly Phe  
95 275 280 285  
96 Ile Arg Val Phe Val Ile Gln Gln Ala Thr Phe Cys Ile Asn Ser Leu  
97 290 295 300  
98 Ala His Tyr Ile Gly Thr Gln Pro Phe Asp Asp Arg Arg Thr Pro Arg  
99 305 310 315 320  
100 Asp Asn Trp Ile Thr Ala Ile Val Thr Phe Gly Glu Gly Tyr His Asn  
101 325 330 335  
102 Phe His His Glu Phe Pro Thr Asp Tyr Arg Asn Ala Ile Lys Trp Tyr  
103 340 345 350  
104 Gln Tyr Asp Pro Thr Lys Val Ile Ile Tyr Leu Thr Ser Leu Val Gly  
105 355 360 365  
106 Leu Ala Tyr Asp Leu Lys Lys Phe Ser Gln Asn Ala Ile Glu Glu Ala  
107 370 375 380  
108 Leu Ile Gln Gln Glu Gln Lys Lys Ile Asn Lys Lys Ala Lys Ile

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109	385	390	395	400												
110	Asn	Trp	Gly	Pro	Val	Leu	Thr	Asp	Leu	Pro	Met	Trp	Asp	Lys	Gln	Thr
111																
112	Phe	Leu	Ala	Lys	Ser	Lys	Glu	Asn	Lys	Gly	Leu	Val	Ile	Ile	Ser	Gly
113																
114	Ile	Val	His	Asp	Val	Ser	Gly	Tyr	Ile	Ser	Glu	His	Pro	Gly	Gly	Glu
115																
116	Thr	Leu	Ile	Lys	Thr	Ala	Leu	Gly	Lys	Asp	Ala	Thr	Lys	Ala	Phe	Ser
117																
118	Gly	Gly	Val	Tyr	Arg	His	Ser	Asn	Ala	Ala	Gln	Asn	Val	Leu	Ala	Asp
119																
120	Met	Arg	Val	Ala	Val	Ile	Lys	Glu	Ser	Lys	Asn	Ser	Ala	Ile	Arg	Met
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122	Ala	Ser	Lys	Arg	Gly	Glu	Ile	Tyr	Glu	Thr	Gly	Lys	Phe	Phe		
123																
126	<210>	SEQ	ID	NO:	3											
127	<211>	LENGTH:	1555													
128	<212>	TYPE:	DNA													
129	<213>	ORGANISM:	Artificial Sequence													
131	<220>	FEATURE:														
132	<223>	OTHER INFORMATION:	synthetic yeast delta-9 desaturase gene modified													
133		for	expression	in	plants											
135	<400>	SEQUENCE:	3													
136	ggatccaaca	atgcctactt	ctggaaactac	tatcgagctt	atcgatgatc	aattccctaa										60
137	ggatgattct	gcttcttctg	gaatcggtta	tgagggttcat	cttactgagg	ctaacatcct										120
138	tgctactgg	cttaacaaga	aggctcctag	aatcgtaac	ggattcggat	ctcttatggg										180
139	atctaaggag	atgggttctg	ttgagttcga	taagaaggga	aacgagaaga	agtctaacc										240
140	tgatagactt	cttgagaagg	ataaccaaga	gaaggaggag	gctaagacta	agatccatat										300
141	ctctgagcaa	ccttggactc	tcaacaactg	gcatcaacat	ctcaactggc	tcaacatgg										360
142	gctcgtctgt	ggaatgccta	tgatcgatg	gtacttcgct	ctctctgaa	aagtgcctc										420
143	ccatctcaac	gttttcctct	tctctgtctt	ctactacgct	gttggaggag	tgtctatcac										480
144	tgctggatac	catagactct	ggtctcatag	atcttactct	gctcattggc	ctcttagact										540
145	cttctacgct	atctttggat	gtgctctgt	tgagggatct	gctaagtgg	ggggacattc										600
146	tcatagaatc	catcatagat	acactgatac	tcttagagat	ccttacgatg	ctagaagagg										660
147	acttttgtac	tctcatatgg	gatggatgt	tcttaagcct	aaccctaagt	acaaggctag										720
148	agctgatatc	actgatatga	ctgatgattg	gactatcaga	ttccaacata	gacattacat										780
149	cttgctcatg	ctccttactg	ctttcgtgt	ccctactctc	atctgtggat	acttcttcaa										840
150	cgattacatg	ggaggactca	tctacgctgg	attcatcaga	gtgttcgtca	tccaaacaagc										900
151	tactttctgt	atcaactcta	tggctcatta	catcggaact	caaccttgc	atgatagaag										960
152	aactcctaga	gataactgga	tcactgctat	cgttacttgc	ggagagggat	accataactt										1020
153	ccatcatgag	ttcccttactg	attatagaaa	cgctatcaag	tggtaaccat	acgatcctac										1080
154	taaaagtgtac	atctacttga	cttctctcg	gggacttgc	tacgatctca	agaagttctc										1140
155	tcaaaaacgct	atcgaggagg	ctcttatccca	acaagagcaa	aagaagatca	acaagaagaa										1200
156	ggcttaagatt	aattggggac	ctgttcttac	tgatcttcct	atgtgggata	agcaaacttt										1260
157	ccttgcttaag	tctaaggaga	acaagggact	tgttatcatc	tctggaatcg	ttcatgtatgt										1320
158	ttctggatac	atctctgagc	atcctggagg	agagacttta	attaagactg	ctcttggaaa										1380
159	ggatgctact	aaggcttct	ctggaggagt	ttacagacat	tctaaccgt	ctcaaaaacgt										1440
160	gcttgctgt	atgagagttg	ctgttatcaa	ggagtctaa	aactctgtca	tcaaatggc										1500
161	ttctaagaga	ggagagatct	acgagactgg	aaagttcttc	tgtatctagag	gatcc										1555

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163 <210> SEQ ID NO: 4  
164 <211> LENGTH: 383  
165 <212> TYPE: PRT  
166 <213> ORGANISM: Arabidopsis thaliana  
168 <400> SEQUENCE: 4  
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172 20 25 30  
173 Val Gly Asp Leu Lys Lys Ala Ile Pro Pro His Cys Phe Lys Arg Ser  
174 35 40 45  
175 Ile Pro Arg Ser Phe Ser Tyr Leu Ile Ser Asp Ile Ile Ile Ala Ser  
176 50 55 60  
177 Cys Phe Tyr Tyr Val Ala Thr Asn Tyr Phe Ser Leu Leu Pro Gln Pro  
178 65 70 75 80  
179 Leu Ser Tyr Leu Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val  
180 85 90 95  
181 Leu Thr Gly Ile Trp Val Ile Ala His Glu Cys Gly His His Ala Phe  
182 100 105 110  
183 Ser Asp Tyr Gln Trp Leu Asp Asp Thr Val Gly Leu Ile Phe His Ser  
184 115 120 125  
185 Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser His Arg Arg His  
186 130 135 140  
187 His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys  
188 145 150 155 160  
189 Gln Lys Ser Ala Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu  
190 165 170 175  
191 Gly Arg Ile Met Met Leu Thr Val Gln Phe Val Leu Gly Trp Pro Leu  
192 180 185 190  
193 Tyr Leu Ala Phe Asn Val Ser Gly Arg Pro Tyr Asp Gly Phe Ala Cys  
194 195 200 205  
195 His Phe Phe Pro Asn Ala Pro Ile Tyr Asn Asp Arg Glu Arg Leu Gln  
196 210 215 220  
197 Ile Tyr Leu Ser Asp Ala Gly Ile Leu Ala Val Cys Phe Gly Leu Tyr  
198 225 230 235 240  
199 Arg Tyr Ala Ala Ala Gln Gly Met Ala Ser Met Ile Cys Leu Tyr Gly  
200 245 250 255  
201 Val Pro Leu Leu Ile Val Asn Ala Phe Leu Val Leu Ile Thr Tyr Leu  
202 260 265 270  
203 Gln His Thr His Pro Ser Leu Pro His Tyr Asp Ser Ser Glu Trp Asp  
204 275 280 285  
205 Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg Asp Tyr Gly Ile Leu  
206 290 295 300  
207 Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His Leu  
208 305 310 315 320  
209 Phe Ser Thr Met Pro His Tyr Asn Ala Met Glu Ala Thr Lys Ala Ile  
210 325 330 335  
211 Lys Pro Ile Leu Gly Asp Tyr Tyr Gln Phe Asp Gly Thr Pro Trp Tyr  
212 340 345 350

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213 Val Ala Met Tyr Arg Glu Ala Lys Glu Cys Ile Tyr Val Glu Pro Asp

214 355 360 365

215 Arg Glu Gly Asp Lys Lys Gly Val Tyr Trp Tyr Asn Asn Lys Leu

216 370 375 380

219 <210> SEQ ID NO: 5

220 <211> LENGTH: 1372

221 <212> TYPE: DNA

222 <213> ORGANISM: Arabidopsis thaliana

224 <400> SEQUENCE: 5

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226 atcgccctta cgtcagctcc atctccagaa acatgggtgc aggtggaaaga atgcccgttc 120

227 ctacttcttc caagaaaatcg gaaaccgaca ccacaaagcg ttttgcgtgc gagaaccgc 180

228 ctttctcggtt gggagatctg aagaaagcaa tcccgccgca ttgtttcaaa cgctcaatcc 240

229 ctcgctctt ctcctacctt atcagtgaca tcattatagc ctcatgcgtt tactacgtcg 300

230 ccaccaattt cttctctctc ctccctcagc ctctctcttta cttggcttgg ccactctatt 360

231 gggcctgtca aggctgtgtc ctaactggta tctgggtcat agcccacgaa tgcggtcacc 420

232 acgcattcag cgactaccaa tggctggatg acacagttgg tcttatcttc catcccttcc 480

233 tcctcgtccc ttacttctcc tggaaagtata gtcatcgccg tcaccatcc aacactggat 540

234 ccctcgaaag agatgaagta ttgtcccaa agcagaaatc agcaatcaag tggtaacggga 600

235 aataccctcaa caacccttgg acgcgtatca tttatgttaac cgtccagttt gtccctgggt 660

236 ggccttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc 720

237 tcttccccaa cgctccatc tacaatgacc gagaacgcct ccagatatac ctctctgtatg 780

238 cgggtattctt agccgtctgt ttgttgc tttatgttgc tttatgttgc tttatgttgc 840

239 cgtatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc 900

240 ttacttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc 960

241 tcaggggagc tttatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc 1020

242 acattacaga cacacacgtt gtcatcacc tttatgttgc tttatgttgc tttatgttgc 1080

243 tggaaatctt aatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc 1140

244 cgtgttatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc 1200

245 aagggtacaa gaaagggtgtt tactgttaca acaataatgttgc tttatgttgc tttatgttgc 1260

246 attgtcgacc tttatgttgc tttatgttgc tttatgttgc tttatgttgc tttatgttgc 1320

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251 <400> SEQUENCE: 6

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254 <210> SEQ ID NO: 7

255 <211> LENGTH: 33

256 <212> TYPE: PRT

257 <213> ORGANISM: Arabidopsis thaliana

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262 Pro Asp Arg Glu Gly Asp Lys Lys Gly Val Tyr Trp Tyr Asn Asn Lys

263 20 25 30

264 Leu

268 <210> SEQ ID NO: 8

269 <211> LENGTH: 30

270 <212> TYPE: PRT

271 <213> ORGANISM: Saccharomyces cerevisiae

VERIFICATION SUMMARY  
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Input Set : A:\PTO.txt  
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L:14 M:270 C: Current Application Number differs, Replaced Current Application No  
L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:252 M:300 W: (50) Intentionally skipped Sequence, : Sequence Id (6) SEQUENCE:

TOOEE50 - FEE E9/2/60